

SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Catalog No.
L05022

Product Name: **4-Vinyl-1-cyclohexene, 98%**
Manufacturer/Supplier Name: Alfa Aesar - A Johnson Matthey Company
Address: 30 Bond St.
Ward Hill, MA 01835
Business Phone: 978-521-6300
Business Fax: 978-521-6350
For information
in North America, call: 978-521-6300
CHEMTREC Numbers:
For emergencies in the US, call CHEMTREC: 800-424-9300
For emergencies outside US, call INTERNATIONAL: (703)527-3887
For Nonemergency, call: (800)262-8200

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SECTION 2 : COMPOSITION, INFORMATION ON INGREDIENTS

Catalog No. L05022

Chemical Name 4-Vinyl-1-cyclohexene
CAS# 100-40-3
% Weight (Typical) 98

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SECTION 3 : HAZARDS IDENTIFICATION

Catalog No. L05022

Emergency Overview: Flammable. Suspect carcinogen. Reproductive effects.

4-Vinyl-1-cyclohexene:

Route of Exposure: Ingestion.
Potential Health Effects:
Eye Contact: Causes eye irritation.
Skin Contact: Causes skin irritation.
Inhalation: Causes respiratory tract irritation.
Ingestion: May be aspirated into lungs if ingested. Risk of pulmonary edema.
Target Organs: G.I. Tract. Reproductive System. Blood.

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SECTION 4 : FIRST AID MEASURES

Catalog No. L05022

Eye Contact: Immediately flush eyes with plenty of water for at least 20 minutes. Assure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention if irritation persists, or symptoms of overexposure become apparent.

Skin Contact: Immediately wash skin with plenty of water for at least 20 minutes, while removing contaminated clothing and shoes. Get medical attention especially, if irritation develops, persists, or symptoms of overexposure become apparent.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Keep warm. Get immediate medical attention.

Ingestion: If swallowed, call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting unless instructed by medical personnel. Get medical attention.

SECTION 5 : FIRE FIGHTING MEASURES

Catalog No. L05022

Fire:	Flammable liquid.
Flash Point:	20°C (68°F)
Auto Ignition Temperature:	269°C (516.2°F)
Extinguishing Media:	Use dry powder, foam, or carbon dioxide when fighting a fire involving this material.
Unsuitable Media:	Water extinguishers are not recommended.
Protective Equipment:	As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

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SECTION 6 : ACCIDENTAL RELEASE MEASURES

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Personal Precautions:	Use proper personal protective equipment as listed in section 8.
Spill Cleanup Measures:	Absorb spill with dry inert material such as dry sand, earth, or vermiculite, then place in suitable container. Refer to section 13 for proper disposal.
Environmental Precautions:	Do not allow material to enter drains or streams.

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SECTION 7 : HANDLING and STORAGE

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Handling:	This product should be handled only by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals, who should take into account the fire, health and chemical hazard data. It should always be handled in an efficient fume hood or equivalent system. The user should consider that the toxicological and physiological properties of many compounds are not yet well determined and that new hazardous products may arise from reactions between chemicals. Care should be taken to prevent any chemical from coming into contact with the skin or eyes and from contaminating personal clothing.
Storage:	Store in a cool, dry, well ventilated area away from sources of heat and incompatible substances. Keep container tightly closed when not in use. Product is air sensitive. Retest in 3 years
Hygiene Practices:	Wash thoroughly after handling. Avoid contact with eyes and skin. Avoid inhaling vapor or mist.

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SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION

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Guideline Type:	ACGIH TLV-TWA
Guideline Information:	0.1 ppm 0.44 mg/m3

Engineering Controls:	Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.
Skin Protection Description:	Wear suitable protective clothing to prevent contact with skin.
Hand Protection Description:	Wear appropriate protective gloves. Consult glove manufacturers for glove permeability data.
Eye/Face Protection:	Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.
Respiratory Protection:	A NIOSH approved air-purifying respirator with an appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited to airborne concentrations that are typically within 10 times the exposure limit. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.
Other Protective:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Ingredient Guidelines

Ingredient: 4-Vinyl-1-cyclohexene

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SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

Catalog No. L05022

Physical State/Appearance:	Liquid
Color:	Colorless
Odor:	Pungent
Vapor Pressure:	19.74 mbar @ 25°C (77°F)
Vapor Density:	2.9
Flash Point:	20°C (68°F)
Auto Ignition Temperature:	269°C (516.2°F)
Boiling Point:	129-131°C (264.2-267.8°F)
Freezing Point:	-109°C (-164.2°F) (Ref:Sax)
Melting Point:	-110 to -108°C (-166 to -162.4°F)
Solubility in Water:	50 mg/L @ 20°C (68°F)
Density:	0.831
Molecular Formula:	C ₈ H ₁₂
Molecular Weight:	108.18

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SECTION 10 : STABILITY and REACTIVITY

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Chemical Stability:	Stabilized with 100 ppm 4-tert-butylcatechol. Do not store unstabilized material. Polymerisation may be induced by heat, light or initiators.
Conditions to Avoid:	High temperatures, flames and sparks. Direct sunlight or other strong light.
Incompatibilities with Other Materials:	Oxidizing agents. Strong acids. Peroxy compounds or other free-radical initiators. Air. Combustible material.
Possible Decomposition Product:	Carbon monoxide.

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SECTION 11 : TOXICOLOGICAL INFORMATIONCatalog No. L05022

4-Vinyl-1-cyclohexene :

RTECS Number:	GW6650000
Eye Effect:	No data reported in the cited references as of the revision date.
Skin Effects:	Skin - rabbit LD50: 20 mL/kg (16.62 gm/kg) (RTECS)
Ingestion Effects:	Oral - rat LD50: 3080 uL/kg (2559 mg/kg) (RTECS)
Inhalation Effects:	Inhalation - rat LCLo: 8000 ppm/4H (RTECS); Inhalation -mouse LC50: 27 gm/m3 (RTECS)
Chronic Ingestion Effects:	Oral - rat TDLo: 17500 mg/kg/14D-I Related to Chronic Data - death; Oral -rat TDLo: 52 gm/kg/13W-I Kidney, Ureter, Bladder - changes in tubules (including acute renal failure, acute tubular necrosis) Related to Chronic Data - death (RTECS); Oral -mouse TDLo: 17500 mg/kg/14D-I Related to Chronic Data - death (RTECS)
Chronic Inhalation Effects:	Inhalation - rat TCLo: 1500 ppm/6H/13W-I Liver - changes in liver weight Kidney, Ureter, Bladder - changes in bladder weight Nutritional and Gross Metabolic - weight loss or decreased weight gain (RTECS); Inhalation -mouse TCLo: 1000 ppm/6H/13W-I Blood - pigmented or nucleated red blood cells Blood - changes in erythrocyte (RBC) count Related to Chronic Data - death; Inhalation -mouse TCLo: 1000 ppm/6H/4W-I Related to Chronic Data - death (RTECS)
Carcinogenicity:	IARC-2B Carcinogen - Possibly Carcinogenic to Humans. ACGIH TLV-A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans. Carcinogenic and equivocal tumorigenic agent by RTECS criteria.
Reproductive Toxicity:	Reproductive effects. (RTECS)

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SECTION 12 : ECOLOGICAL INFORMATIONCatalog No. L05022

Ecotoxicity:	EC50 Daphnia magna >100 mg/L/48H (supplier data); LC50 Oryzias latipes 17 mg/L/48H (MITI): may be harmful to aquatic organisms.
Bioaccumulation:	Not expected to bioaccumulate and/or bioconcentrate significantly in aquatic organisms. BCF Cyprinus carpio 83-211 (MITI).
Biodegradation:	May be slow to biodegrade in soil and water (MITI). No data available on the photodegradability of vapor in the atmosphere (HSDB).
Environmental Stability:	No data available

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SECTION 13 : DISPOSAL CONSIDERATIONSCatalog No. L05022

Waste Disposal:	Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state and local guidelines, by a licensed disposal company.
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SECTION 14 : TRANSPORT INFORMATIONCatalog No. L05022

DOT Shipping Name:	Flammable liquids, toxic, n.o.s. (4-Vinyl-1-cyclohexene)
DOT Hazard Class:	3
DOT Identification Number:	UN1992
DOT Packing Group:	II
DOT Subpart E Labeling Requirement:	3, 6.1

SECTION 15 : REGULATORY INFORMATION

Catalog No. L05022

4-Vinyl-1-cyclohexene :

TSCA 8(b): Inventory Status: Listed on the TSCA inventory.

TSCA 8(d): Manufacturer Health and Safety Data TSCA Section 8(D) - Manufacturer Health and Safety Data : CAS# 100-40-3: Effective Date: January 11, 1990; Sunset Date: November 9, 1993

TSCA 12(b): Export Notification CAS# 100-40-3: 4/12b

State: 4-Vinyl-1-cyclohexene, stab. w can be found on the following state right to know lists: California, Florida, Pennsylvania, Minnesota, Massachusetts. The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act: WARNING: This product contains 4-Vinyl-1-cyclohexene, stab. w, a chemical known to the state of California to cause cancer. California No Significant Risk Level: None of the chemicals in this product are listed.

Risk Phrases: R11 Highly flammable.
R45 May cause cancer.
R65 Harmful: may cause lung damage if swallowed.

Safety Phrase: S53 Avoid exposure obtain special instructions before use.
S16 Keep away from sources of ignition No smoking.
S33 Take precautionary measures against static discharges.
S45 In case of accident or if you feel unwell, seek medical advice immediately
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

SECTION 16 : ADDITIONAL INFORMATION

Catalog No. L05022

MSDS Preparation Date: January 1, 2002, Version 1

MSDS Revision Date: April 14, 2003.

MSDS Author: Actio Corporation.

Disclaimer:

This Health and Safety Information is correct to the best of our knowledge and belief at the date of its publication but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as a guidance for safe handling, storage and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment. Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet. We welcome any additional information about our products that customers have obtained by personal experience.

References:

1. American Chemical Society, STN Easy Online Database
2. Brethericks Reactive Chemical Hazards Database. Version 2.
3. Gassarett and Doulls Toxicology, The Basic Science of Poisons.
4. Hawleys Condensed Chemical Dictionary, Thirteenth Edition
5. IARC monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, WHO International Research on Cancer.
6. Industrial Hygiene and Toxicology, by F.A. Patty.
7. National Library of Medicine, Department of Health and Human Services, Hazardous Substances Data Bank (HSDB).
8. National Toxicology Program (NTP) Eighth Report on Carcinogens, 1997.

9. NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) and Pocket Guide to Chemical Hazards.
10. OSHA Hazard Communication Standard, 1910.1200 and Z Tables.
11. Sax Dangerous Properties of Industrial Materials. Tenth Edition.
12. The Merck Index: An Encyclopedia of Chemicals and Drugs. Merck and Company. Twelfth Edition 1998.
13. Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment and Biological Exposure Indices. TLV Booklet, 2001.

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